Abstract

A system and method for identifying the presence of specific nucleotide sequences in a target DNA sample is provided. The nucleotide detection system comprises a flat plate detection cell having a sample chamber, a membrane and an optical window providing optical access to the interior of the cell. A target DNA sample is mixed with labeled nucleotides and other chemistries, and undergoes a chemical reaction, such that if the DNA sample has the nucleotide, the resulting mixture will contain labeled nucleotides that have undergone a change in molecular weight. The reacted sample is applied to the sample chamber and the membrane in the flat plate nucleotide detection system is utilized to effect the separation of the smaller molecular weight labels from the sample. After separation, the presence of the label in either the sample chamber or the filtrate chamber, or on the membrane itself, is detected through the optical window to the sample chamber or through an optical window to the filtrate chamber to determine the presence or absence of the nucleotide sequence.